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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/679,668	10/05/2000	Gary Mark Crosbie	200-1136	7069

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EXAMINER
MACK, COREY D

ART UNIT	PAPER NUMBER
2855	

DATE MAILED: 11/27/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/679,668	Applicant(s) CROSBIE ET AL.	
	Examiner Corey D. Mack	Art Unit 2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 August 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-8 and 10-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1, 10 and 11 recite *a* substrate; and, a reference resistor and a flow-sensing resistor "formed on *said* substrate". However, it appears from the specification and the drawings that the reference resistor and the flow-sensing resistor are formed on separate substrates arranged upstream and downstream of each other along the flow path. Therefore, the claims are rendered indefinite.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3, 6-8 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakawa et al. (US 6,134,960) in view of Bischel (US 6,444,297).

A. With respect to Claims 1 and 10, Yamakawa teaches a gaseous flow sensor comprising a substrate 1 formed of an electrically insulating material (silicon), a reference resistor 6a, 6b and flow-sensing resistor 4, 5 formed on the substrate, and an electrical circuit 23 that communicates with the reference and flow-sensing resistors. Reference resistors measure an

ambient temperature of flow, while flow-sensing resistors (heat generating resistors) are heated to a temperature higher than ambient. Yamakawa lacks a resistive material of an oxide used to form the resistors. Bischel teaches forming resistive heat-generating thick film elements from oxides (column 1, lines 33-64). One of ordinary skill in the art would have recognized the advantage and desirability of using oxides to form resistive elements in order to provide a thermally and mechanically stable structure.

B. With respect to Claims 3 and 11, Yamakawa teaches a first resistor having an electrical resistance at least 15 times the electrical resistance of the second resistance (column 1, lines 47-50). One of ordinary skill in the art would have readily recognized the advantage and desirability to use resistors having greatly differing resistances in order to provide improved temperature response to changes in the resistances.

C. With respect to Claims 6 and 7, Yamakawa teaches a reference resistor formed in a serpentine configuration having vertical portions and horizontal portions with an aspect ratio of length to width being at least two (See Fig. 13). One of ordinary skill in the art would have readily recognized the advantage and desirability to provide a potential difference that allows the determination of the flow rate and direction.

D. With respect to Claim 8, Yamakawa teaches an electrical circuit that maintains a target temperature differential by controlling an electrical current (column 9, line 54 – column 10, line 37). One of ordinary skill in the art would have readily recognized the advantage and desirability to control the electrical current to the resistors in order to protect the resistor from overcurrent.

E. With respect to Claim 12, Yamakawa lacks an insulating substrate formed of a ceramic. Bischel discloses a ceramic substrate 10 having an oxide buffer. One of ordinary skill in the art would have readily recognized the advantage and desirability of using ceramic substrates to effectively remove heat and function as a structural element.

5. Claims 2, 4-5, 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakawa et al. (US 6,134,960) in view of Bischel (US 6,444,297) as applied to claims 1, 3, 6-8 and 10-11 above, and further in view of Lee et al. (US 6,406,646).

A. With respect to Claim 2, Yamakawa as modified by Bischel does not explicitly disclose an oxide composition of Pb, Ru, Si and Bi. Lee teaches the use of Pb, Ru, Si and Bi containing oxides for enhancing the adhesive strength of the film to the substrate. Therefore, at the time the invention was made, one of ordinary skill in the art would have recognized the advantage and desirability of using oxide compositions to enhance bond strengths.

B. With respect to Claims 4 and 5, Yamakawa as modified by Bischel does not explicitly disclose resistor thicknesses between 2 and 30 micrometers. Lee discloses a resistive thick film element of 10 micrometers (column 5, lines 55-65). One of ordinary skill in the art would have readily recognized the desirability and advantage of providing resistors having thicknesses between 2 and 30 micrometers in order to provide sensors that can quickly be heated to operating ranges of various electronic equipment.

C. With respect to Claim 17, Yamakawa as modified by Bischel lacks thick film printing resistors from an oxide containing paste. Lee discloses forming thick film resistors from an oxide containing paste (column 2, lines 17-45). One of ordinary skill in the art would have

readily recognized the desirability and advantage of thick film printing a substrate from an oxide containing paste in order to control the electrical and mechanical properties of the substrate.

D. With respect to Claim 18, Lee lacks explicitly teaching forming the resistors in the same process. However, forming both resistors in the same process is well-known and would have been recognized by one of ordinary skill in the art in order to ensure consistent resistor elements.

E. With respect to Claim 21, Yamakawa lacks firing the resistors after being printed. Bischel discloses the step of firing the resistor after thick film printing (column 4, lines 6-20). One of ordinary skill in the art would have readily recognized the desirability and advantage of firing the resistor after thick film printing in order to firmly adhere the resistor to the substrate.

Response to Arguments

6. Applicant's arguments filed 14 August 2002 have been fully considered but they are not persuasive. Applicant's arguments with respect to claims 1-8 and 10-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Corey D. Mack whose telephone number is (703) 305-3424. The examiner can normally be reached on M-F, 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 308-1782 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3431.

CDM

Corey D. Mack, Esq.
Patent Examiner
Art Unit 2855

November 18, 2002

Hezron S. Willi

HEZRON WILLIAMS
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